Matrix of the Month

January 2021

Aflatoxins B/G and Ochratoxin A in Oat Cakes ~ Manual and Automated ~

Do you have a special matrix that we should test for mycotoxins? Please let us know and write an e-mail to: info@LCTech.de

Sample Preparation

MYCOTOXINS

Oat Cake

Oat cakes are a popular sweetness worldwide and are available in many different varieties: with chocolate chips, with flaked almonds and many more creations.

The basis of oat cakes are, as the name already suggests, oat or oat flakes. The name „oat“refers to the spelt or husked grain. Inside the grain you will find the core. For the production of flakes, the oat core is humidified and then rolled out by a flaking roller. Only after the drying process, the typical oat flakes are ready to use. The main growing areas are Ireland, Germany and Scotland. Other growing areas are also located in North America and West Asia.

One for All – Combined Immunoaffinity Column Afla-OtaCLEAN

Aflatoxins B/G and ochratoxin A are produced by fungi in wet storage and are often found together in many food and feed products, such as oat cakes. LCTech offers the perfect solution to save you time during the clean-up process. Analyse your sample for several mycotoxins in only one step.

LCTech's combined immunoaffinity column **Afla-OtaCLEAN** makes it possible.

The column is suitable for manual processing but also for automated clean-up with the robotic system FREESTYLE SPE. You can also combine the practical SMART columns from LCTech. Plug an AflaCLEAN SMART column and OtaCLEAN SMART column on top of each other and start the manual clean-up of aflatoxins B/G and orchatoxin A at once.

Combined AflaCLEAN and OtaCLEAN SMART column and Afla-OtaCLEAN column

Processing Protocol

Homogenise 20 g of oat cakes with 2 g of sodium chloride. Extract the sample with 100 mL methanol/water (80/20/ (v/v)) and 50 mL of n-hexane in order to remove fat and oil. For high extraction effiecincies, continue the extraction (depending on extraction device) for at least 30 minutes.

Filtrate the raw extract and dilute 7 mL of the n-hexane free phase with 43 mL PBS. For a better phase separation between the methanolic phase and the n-hexane phase, centrifuge the extract for 5 minutes at 3000 x g. The reduction of the methanol content may cause turbidity in the diluted sample. Therefore, filter the sample again to avoid clogging of the column.

Load 50 mL of the sample (correspond to 1.4 g matrix equivalents) onto an Afla-OtaCLEAN immunoaffinity column. Wash the vial with 5 mL deionised water.

Load the rinsing solution onto the column. Wash the column again with 5 mL deionised water. Then remove any remaining liquid from the column by flushing air through it.

Elute the column with 2 mL methanol. Ensure that the methanol is allowed to act on the column bed for 5 minutes to ensure a fully denaturation of the antibodies and release of toxins.

Recovery Rates
Content of aflatoxins B/G in oat cake

Aflatoxins:	B1	B2	G1	G2
Standard*	100	100	100	100
Recovery Rate** Oat Cake, 10 ppb	80	92	93	91

* Standard was set = 100% , ** Corrected with non-spiked sample / The results are in accordance with the performance specifications of the EC 401 / 2006 (section 4.3.1).

Recovery Rates
Content of ochratoxin A in oat cake

Mykotoxin:	Ochratoxin A
Standard*	100
Recovery Rate** Oat Cake, 10 ppb	89

* Standard was set = 100% , ** Corrected with non-spiked sample / The results are in accordance with the performance specifications of the EC 401 / 2006 (section 4.3.1).

HPLC-Conditions
Aflatoxin B/G und Ochratoxin A

Mykotoxin	Aflatoxin B/G	Ochratoxin A
HPLC:	Isocratic	
Column Oven:	36 °C	40 °C
Separation Column:	RP C-18	EC125/3 Nucleosil 120-3 C-18
Flow Rate/ Eluent:	1.2 mL/min; HPLC-water/ methanol/ acetonitrile (60/30/15 (v/v/v))	0.6 mL/min; HPLC-water/methanol/ acetonitrile (40/55/5 (v/v/v)) + 1% acetic acid)
Flourescence Detection:	Derivatisation with UVE Photochemical Reactor	Without Derivatisation
Excitation Wavelength:	365 nm	335 nm
Emission Wavelength:	460 nm	465 nm

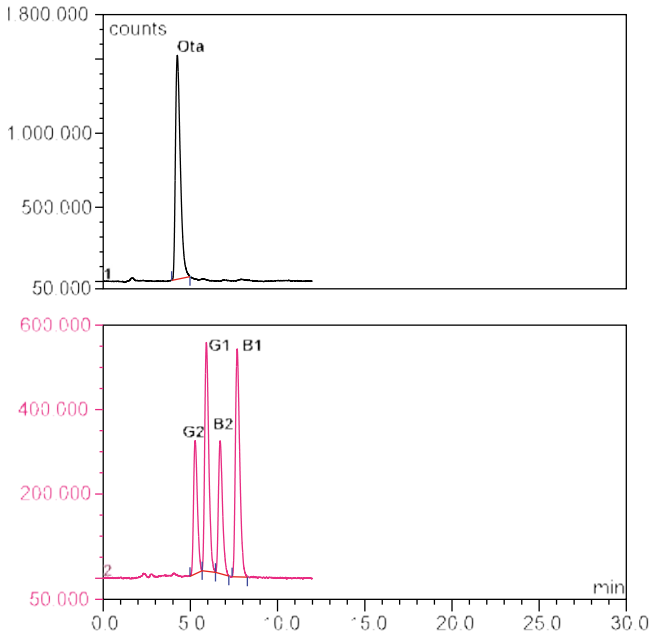
Matrix of the Month

Save Time and Money Cleverly!

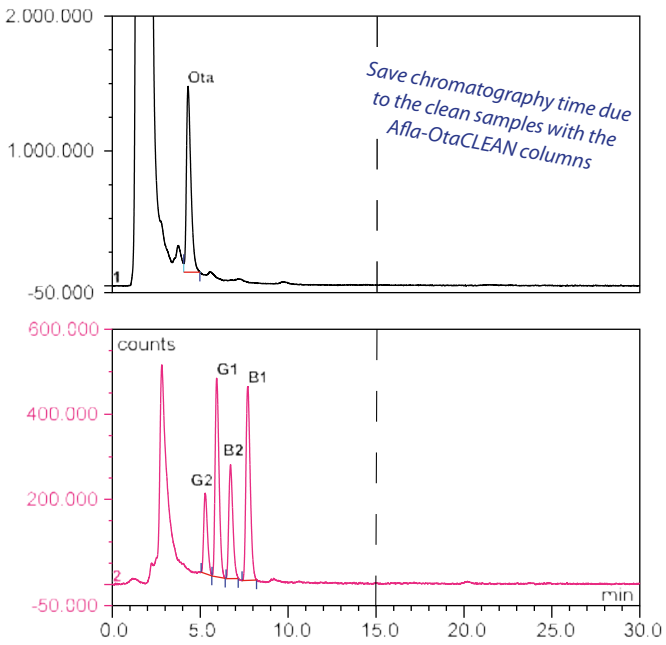
The chromatograms below show that with LCTech immunoaffinity columns excellent chromatographic results can be achieved even in highly contaminated matrices, as shown by good recoveries.

For the clean-up of aflatoxins B/G and ochratoxin A in one matrix, Afla-OtaCLEAN also reduces the working time by half and saves money at the same time, because with the combined immunoaffinity column both toxin groups can be cleaned-up in one step.

Chromatograms



Blck: Standard 20 µg/Kg Ochratoxin A
Red: Standard 20 µg/Kg Alfatoxin B/G



Black: Oat Cake 20 µg/Kg, clean-up with immunoaffinity column Afla-OtaCLEAN
Red: Oat Cake 20 µg/Kg, clean-up with immunoaffinity column Afla-OtaCLEAN

Your Advantages at a Glance

- Capacity Ochratoxin A: 200 ng Ochratoxin A
- Capacity Aflatoxin B1: 150 ng Aflatoxin B1
- Best recoveries: B1 > 90 %, B2 > 80 %, G1 > 90 %, G2 > 60 %, ochratoxin A > 90 % according to AOAC standards
- Suitable for automated processing
- 3 mL format
- Certificate of quality
- Shelf life: 18 months at room temperature between 4 and 30 °C

These LCTech Products were used:

Afla-OtaCLEAN Immunoaffinity Column for Aflatoxin B/G and Ochratoxin A
P/N 11022 / 11771

HPLC Separation Column RP C-18
P/N 10522

Precolumn holder for aflatoxin analysiss
P/N 10523

UVE Photochemical Reactor
P/N 10519

Guard column holder
P/N 10750

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